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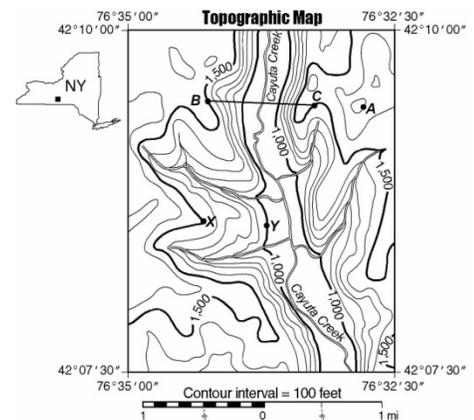
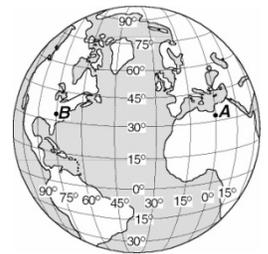
## MEGA EARTH SCIENCE REGENTS REVIEW

### UNIT 1 – Review

- \_\_\_\_\_ are facts derived from the environment by using the five senses.
- \_\_\_\_\_ are conclusions or predictions based on your observations.
- Mass- the amount of \_\_\_\_\_ in an object. Volume- the amount of \_\_\_\_\_ an object occupies.
- The \_\_\_\_\_ of any given substance will remain the same regardless of the size, shape, or mass of the sample.
- As the pressure inc, the density will \_\_\_\_\_. As the temperature inc, the density \_\_\_\_\_.
- Water expands when it \_\_\_\_\_ causing density to \_\_\_\_\_.
- Most changes are \_\_\_\_\_, which means that they are predictable (repeating pattern).
- Dynamic Equilibrium means \_\_\_\_\_ are occurring but overall they \_\_\_\_\_ out.
- Objects more dense than water \_\_\_\_\_, less dense will \_\_\_\_\_.
- Because the Earth bulges slightly at the equator and is slightly flattened at the poles it is called an \_\_\_\_\_.
- \_\_\_\_\_.
- A person would weigh slightly \_\_\_\_\_ at the poles because he/she is \_\_\_\_\_ to the center of the Earth.
- Evidence for a round earth: photos from space (best evidence), ships disappear slowly over the horizon, Earth's shadow on the moon is curved (lunar eclipse), Polaris = latitude, gravity measurements are difference.

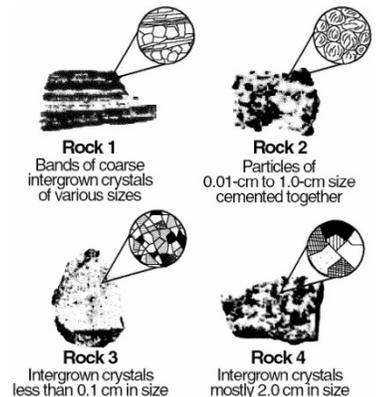
### UNIT 2 – Maps

- The altitude of Polaris (North Star) above the horizon is the same as the observer's \_\_\_\_\_.
- You can only see Polaris in the \_\_\_\_\_ hemisphere –always have to look \_\_\_\_\_ to see Polaris.
- If you're at 90°N, then Polaris is \_\_\_\_° above the horizon- If you are at 0° then Polaris is \_\_\_\_°.
- \_\_\_\_\_ Lines run left to right (horizontal) but measures distances \_\_\_\_\_ and \_\_\_\_\_ of the equator.
- \_\_\_\_\_ Lines run up and down (vertically) but measure east and west of the Prime Meridian.
- Longitude is based on earth's rotation of \_\_\_\_\_ and the sun's apparent motion.
- If you travel \_\_\_\_\_ time becomes less, if you travel \_\_\_\_\_, time will increase!
- The closer the isolines (contour, isobar, isotherm) the \_\_\_\_\_ the slope (gradient).
- Contour lines always bend at a stream forming a "V" that points \_\_\_\_\_.
- \_\_\_\_\_ – the elevation increase between two contour lines, Ocean/ sea level = 0.
- Streams always flow from \_\_\_\_\_ to \_\_\_\_\_ elevation.

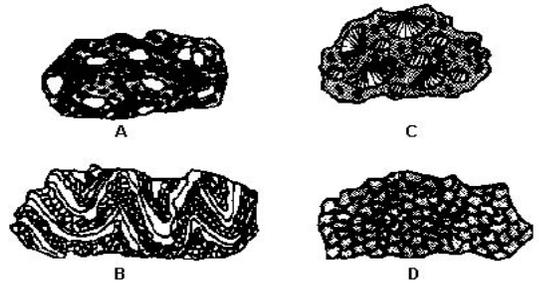


### UNIT 3 – Rocks and Minerals

- Rocks are classified based on \_\_\_\_\_.
- Igneous rocks form from the \_\_\_\_\_ (crystallization) of molten material (lava or magma.)
- Igneous exhibit intergrown/interlocking \_\_\_\_\_.
- \_\_\_\_\_ texture – gas pockets (porous). An example would be the rock \_\_\_\_\_.
- If an igneous rock cools extremely fast, the rock will exhibit a \_\_\_\_\_ texture.
- When an igneous rock cools fast, \_\_\_\_\_ crystals form.
- When an igneous rock cools slowly, \_\_\_\_\_ crystals form.
- Intrusive = \_\_\_\_\_ ground.

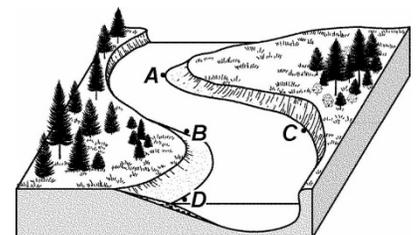


32. Extrusive = \_\_\_\_\_ ground.
33. Mafic rocks are \_\_\_\_\_ with a \_\_\_\_\_ density.
34. Felsic rocks are \_\_\_\_\_ with a \_\_\_\_\_ density.
35. Clastic sedimentary rocks are formed by the \_\_\_\_\_ and \_\_\_\_\_ of sediments.
36. Bioclastic – form from the compaction and cementation of \_\_\_\_\_.
37. Crystalline sedimentary rocks form from the \_\_\_\_\_ of water and \_\_\_\_\_ of dissolved mineral from a solution.
38. Only rock type to contain fossils - \_\_\_\_\_.
39. Metamorphic rocks from pre-existing rocks that have been altered due to \_\_\_\_\_ and/or \_\_\_\_\_.
40. \_\_\_\_\_ rocks may be foliated (banding.)
41. Key words for \_\_\_\_\_ rocks are ; foliation, re-crystallize, distorted structure.
42. Mineral properties such as cleavage and hardness depend on the \_\_\_\_\_ of the molecules.
43. The most common mineral is \_\_\_\_\_ (composed of silicon and oxygen.)
44. Cleavage- the tendency for a mineral to break along \_\_\_\_\_, \_\_\_\_\_ surfaces.
45. Hardness – the \_\_\_\_\_ to being \_\_\_\_\_.



**UNIT 4 – Surface Processes**

46. \_\_\_\_\_ is the force behind all erosion.
47. \_\_\_\_\_ is the primary agent of erosion.
48. Stream velocity depends on \_\_\_\_\_ and \_\_\_\_\_.
49. The size of the particle transported depends on the stream's \_\_\_\_\_.
50. Heavy-dense-round particles settle \_\_\_\_\_ in water.
51. Graded bedding (vertical sorting) \_\_\_\_\_ sediments are on the bottom.
52. Glacial sediments are \_\_\_\_\_, scratched and form \_\_\_\_\_ shaped valleys.
53. Stream deposits are \_\_\_\_\_, round, and form \_\_\_\_\_ shaped valleys.
54. Weathering- Break down of rocks at the earth's surface into \_\_\_\_\_.
55. \_\_\_\_\_ – broke down pieces of rock.
56. \_\_\_\_\_ - mixture of weathered rock (sediments) and organic remains that cover bedrock.
57. Chemical weathering dominates in \_\_\_\_\_ and \_\_\_\_\_ climates.
58. Physical weathering dominates in \_\_\_\_\_ and \_\_\_\_\_ climates. (Good For Frost Wedging)
59. As the particle size decreases, the rate of weathering will \_\_\_\_\_.
60. When particles are broken into smaller pieces, the surface area \_\_\_\_\_.
61. Sediments are classified based on their \_\_\_\_\_. (i.e. .02cm particles are sand)
62. Erosion- \_\_\_\_\_ of sediments
63. \_\_\_\_\_ is the ultimate force behind erosion.
64. \_\_\_\_\_ is the primary agent of erosion.
65. Dissolved mineral are carried in \_\_\_\_\_.
66. Silt/Clay colloids are carried by \_\_\_\_\_. Sand/ Pebbles \_\_\_\_\_ and \_\_\_\_\_ along the bottom.
67. As the velocity increases, the size of the sediments a stream can transport \_\_\_\_\_.
68. The velocity of a stream is greatest on the \_\_\_\_\_ of a meander (bend).
69. Erosion occurs on the \_\_\_\_\_ of a meander where velocity is \_\_\_\_\_.
70. \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, particles are the first to settle out of water as the water slows down. (Sorting Sediments)
71. Sediments transported by water are \_\_\_\_\_ and \_\_\_\_\_ due to abrasion.
72. Streams erode a \_\_\_\_\_ shaped valley. Glaciers erode a \_\_\_\_\_ shaped valley.
73. Sediments deposited by glaciers are \_\_\_\_\_, (all mixed up in size and shape.)

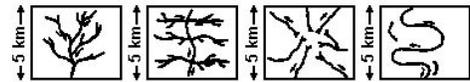


74. After a glacier has moved through an area the bedrock is \_\_\_\_\_ and \_\_\_\_\_ with parallel glacial striations (scratches).
75. Wind deposits consist of fine grained well sorted particles (sand) particles exhibit a pitted/frosted appearance and cross bedded layers.
76. Residual soil- developed from the bedrock below it- \_\_\_\_\_ mineral composition as bedrock below.
77. \_\_\_\_\_ drift moves sand along the beach in the direction of the ocean current.
78. An arid landscape has \_\_\_\_\_ slopes with \_\_\_\_\_ angles.
79. A landscape is determined by the climate, bedrock, and geologic structures.
80. Stream Drainage patterns – \_\_\_\_\_ pattern for MTs – dendritic pattern for \_\_\_\_\_, Plateaus have a rectangular or \_\_\_\_\_ pattern.

**UNIT 5 – Groundwater**

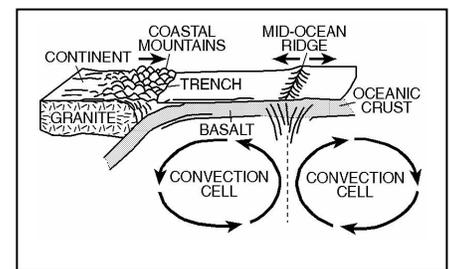
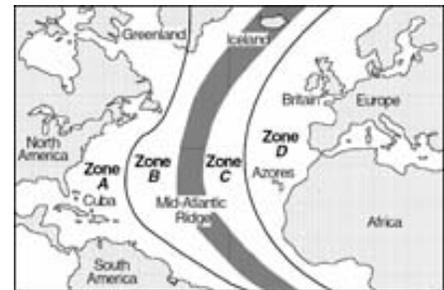
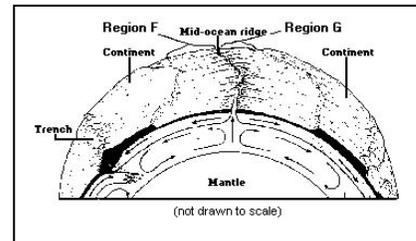
81. As particle size increases, permeability \_\_\_\_\_.
82. Porosity (percentage of empty pore spaces) does not depend on \_\_\_\_\_.
83. \_\_\_\_\_ particle retain the most water after infiltration.
84. Runoff \_\_\_\_\_ when a surface is impermeable, saturated, steeply sloped.
85. In order for infiltration to occur the ground needs to be \_\_\_\_\_ and \_\_\_\_\_.
86. If the rate of precipitation is greater than the rate of infiltration, \_\_\_\_\_ will occur.
87. Capillarity (movement of water upward against gravity) increases when particle size \_\_\_\_\_.
88. \_\_\_\_\_ - process by which living plants release water vapor to atmosphere.

The diagrams below represent stream drainage patterns.

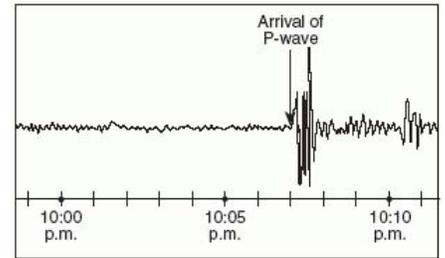


**UNIT 6 – Dynamic Crust**

89. Folds, faults, \_\_\_\_\_ provide evidence that the earth's crust has moved.
90. Earthquake is a sudden movement along a fault, usually happens at \_\_\_\_\_.
91. \_\_\_\_\_ (tidal wave) caused by underwater earthquake.
92. Fossils of marine life found at high elevation are evidence of \_\_\_\_\_.
93. Evidence of \_\_\_\_\_ – The puzzle like appearance of the continents (South America/Africa) South America and Africa have same: fossils, rock layers. Climactic evidence (i.e. glacier in Africa?)
94. Mid-Ocean ridges (spreading center) are areas where \_\_\_\_\_ s being created as tectonic plates move apart.
95. \_\_\_\_\_ plate boundary – Two plates move apart.
96. \_\_\_\_\_ - two plates move toward one another.
97. Proof of sea floor spreading -1- the age of the ocean floor is \_\_\_\_\_ at the mid ocean ridges and gets \_\_\_\_\_ as you move away in either direction. 2- There is also a matching pattern of earth's \_\_\_\_\_ polarity on either side of the ridge.
98. Inferences about Earth's interior come from the study of \_\_\_\_\_.
99. Earthquakes and volcanoes happen in the same spot, near \_\_\_\_\_.
100. \_\_\_\_\_ are not associated with plate boundaries –magma burns through plate = a series of islands (Hawaii).
101. Continental crust is \_\_\_\_\_ with a density of \_\_\_\_\_ and is composed of \_\_\_\_\_.
102. Oceanic crust is \_\_\_\_\_, with a density of \_\_\_\_\_ and is composed of \_\_\_\_\_.
103. \_\_\_\_\_ Boundary – Plates slide past each other (San Andres Fault).
104. Subduction zones/Trenches are where \_\_\_\_\_ is destroyed. (Recycled).
105. \_\_\_\_\_ in the asthenosphere (mantle) cause the plates to move.



106. P- Waves travel \_\_\_\_\_ than S- waves.  
 107. P waves travel through \_\_\_\_\_ & \_\_\_\_\_, but S- waves through \_\_\_\_\_ only.  
 108. We can infer that the outer core is \_\_\_\_\_ because \_\_\_\_\_ waves cannot penetrate it.  
 109. You need \_\_\_\_\_ seismic stations to plot an epicenter.  
 (Where three circles meet).

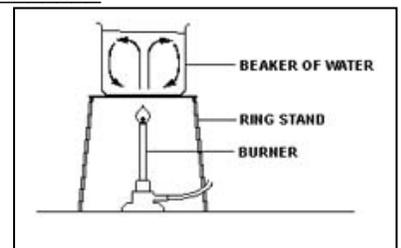


**UNIT 7 – Geologic Time**

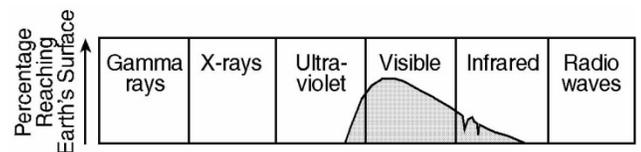
110. Undisturbed strata – bottom layer is \_\_\_\_\_, top layer is \_\_\_\_\_.  
 111. Intrusions are faults are \_\_\_\_\_ than the rock they effect.  
 112. An \_\_\_\_\_ is a buried erosional surface. Means missing time/gap in rock record.  
 113. Uranium – 238 dates \_\_\_\_\_ rocks. Carbon – 14 dates \_\_\_\_\_, once living objects.  
 114. The half-life of a radioactive element \_\_\_\_\_ be changed.  
 115. The half-life of an element is the amount of time it takes for \_\_\_\_\_ of the parent atoms to decay into daughter atoms.  
 116. Half Life never changes NO Matter What! Radioactive elements decay \_\_\_\_\_!  
 117. To be a useful index fossil, as species must have lived for a \_\_\_\_\_ period of time over a \_\_\_\_\_ geographic area.  
 118. Layers of volcanic ash are good time markers because they are deposited \_\_\_\_\_ over a \_\_\_\_\_ area.  
 119. Geologic time is divided into units based on \_\_\_\_\_ evidence.  
 120. In general, life has evolved from the \_\_\_\_\_ to the \_\_\_\_\_.

**UNIT 8/9 – Weather**

121. The color \_\_\_\_\_ absorbs, while \_\_\_\_\_ reflects energy.  
 122. Smooth/shiny surfaces \_\_\_\_\_ more radiation, and rough dull surfaces \_\_\_\_\_ more radiation.  
 123. \_\_\_\_\_ transfers energy by direct contact (molecules collide).

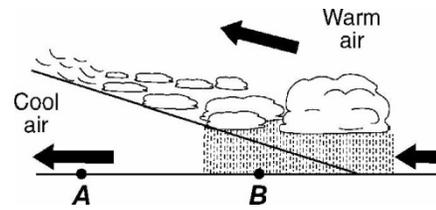
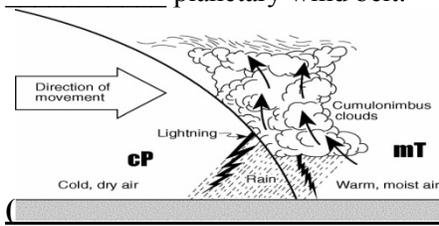


124. Convection- heat transfers due to \_\_\_\_\_ differences. (gases and liquids.)  
 125. Hot air and liquids \_\_\_\_\_ because they are \_\_\_\_\_ dense and \_\_\_\_\_.  
 126. Radiation – transfer of energy in the form of electromagnetic \_\_\_\_\_.  
 127. Electromagnetic energy is categorized based on \_\_\_\_\_ (pg 14 ESRT)  
 128. The portion of the sun’s electromagnetic energy that reaches the Earth’s surface with the maximum intensity is \_\_\_\_\_.

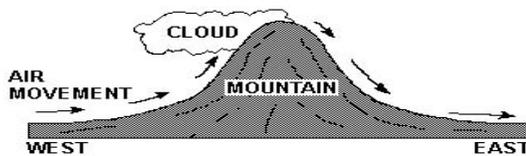


129. The ozone is found in the \_\_\_\_\_ layer of the atmosphere and absorbs harmful rays known as \_\_\_\_\_.  
 130. \_\_\_\_\_ energy is energy of motion.  
 131. \_\_\_\_\_ energy is stored energy or “energy of position”.  
 132. Use the ESRT to see which process release energy and which processes gain energy (front page.)  
 133. \_\_\_\_\_ is heat energy that is re-radiated by the earth.  
 134. Land heats up \_\_\_\_\_ than liquid water because it has a \_\_\_\_\_ specific heat.  
 135. The hottest time of the year is \_\_\_\_\_ (approx date), which is after the angle of insolation (6/21)  
 136. Hottest part of the day is \_\_\_\_\_ (approx time) which is after the greatest angle of insolation (noon).  
 137. As altitude increases, air pressure \_\_\_\_\_.  
 138. As altitude increases, the amount of water vapor \_\_\_\_\_.  
 139. As temperature increases, density of air \_\_\_\_\_. As temperature increases, air pressure \_\_\_\_\_.  
 140. AS temperature increases, the moisture holding capacity of the air \_\_\_\_\_.  
 141. In Low pressure systems Lows blow \_\_\_\_\_ and \_\_\_\_\_  
 142. In high pressure systems winds blow \_\_\_\_\_ and \_\_\_\_\_  
 143. At the center of a low pressure center, air \_\_\_\_\_ and \_\_\_\_\_

144. At the center of a high pressure center air \_\_\_\_\_ and \_\_\_\_\_
145. The highest pressure is \_\_\_\_\_ and \_\_\_\_\_.
146. Air pressure is lowest when it is \_\_\_\_\_ and \_\_\_\_\_.
147. Winds blow due to difference in \_\_\_\_\_.
148. Wind blows from regions of \_\_\_\_\_ to \_\_\_\_\_ pressure.
149. Winds are named for the direction the \_\_\_\_\_.
150. Weather patterns (in the U.S.) move from \_\_\_\_\_ to \_\_\_\_\_, because we are located in the \_\_\_\_\_ planetary wind belt.



151. A front is a boundary between 2 air masses.
152. When warm air rises, it \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_. (R.E.C.C.)
153. In order for clouds to form, the air needs to be \_\_\_\_\_ and \_\_\_\_\_ must be available.
154. The closer the air temperature is to the dew point the \_\_\_\_\_ the relative humidity and the greater the chance for \_\_\_\_\_.
155. Air mass characteristics (temp. moisture) are determined by the \_\_\_\_\_.
156. The mT air mass that affect NY's weather is \_\_\_\_\_ and \_\_\_\_\_ and forms over the \_\_\_\_\_ of \_\_\_\_\_.
157. cP air masses are \_\_\_\_\_ and \_\_\_\_\_ and form over \_\_\_\_\_.
158. \_\_\_\_\_ – a percentage of the amount of moisture in the air to the maximum amount it can hold.
159. \_\_\_\_\_ – When the air is holding the \_\_\_\_\_ amount of water it can hold.
160. \_\_\_\_\_ – Temperature at which \_\_\_\_\_ occurs (air is saturated.)
161. When the air temperature equals the dew point temperature relative humidity is \_\_\_\_\_.
162. When the air temperature approaches the dew point temperature relative humidity is \_\_\_\_\_.
163. Precipitation \_\_\_\_\_ pollution and \_\_\_\_\_ atmospheric transparency.
164. Dry, hot and windy conditions \_\_\_\_\_ the rate of evaporation.
165. \_\_\_\_\_ – short lived (a minute or less) small in size- get in the basement!
166. \_\_\_\_\_ – Low Pressure systems- last days, very large, high winds, - evacuate – stock pile food/ water, batteries, etc.
167. During the day there is a \_\_\_\_\_ breeze. At night a \_\_\_\_\_ breeze develops.
168. Continental climates = \_\_\_\_\_ temperature range. Cooler \_\_\_\_\_ and warmer \_\_\_\_\_.
169. Marine climates = \_\_\_\_\_ temperature range. Cooler \_\_\_\_\_ and warmer \_\_\_\_\_.
170. The windward side of a mountain is \_\_\_\_\_ and \_\_\_\_\_. The leeward side is \_\_\_\_\_ and \_\_\_\_\_.

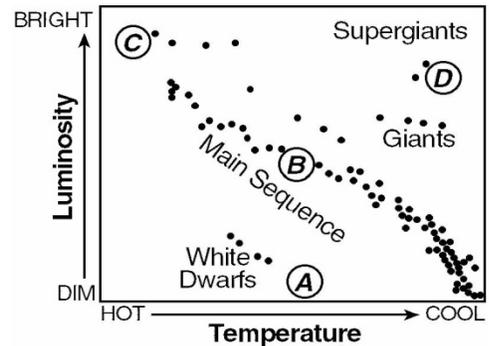


171. Ocean currents are caused by \_\_\_\_\_, and are deflected due to the \_\_\_\_\_.

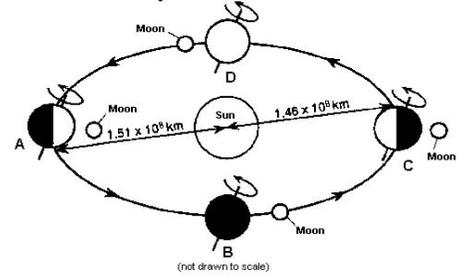
**Unit 10 – Astronomy**

172. The red shift (Doppler Effect) and cosmic background radiation is evidence for the Big Bang Theory
173. Light from distant galaxies show a shift to the \_\_\_\_\_ end of the visible spectrum, which is evidence that the universe is \_\_\_\_\_.
174. Our sun is a medium size (Main Sequence) star in the galaxy called the \_\_\_\_\_.
175. Most stars spend a majority of their life as an average \_\_\_\_\_ star. P. 15

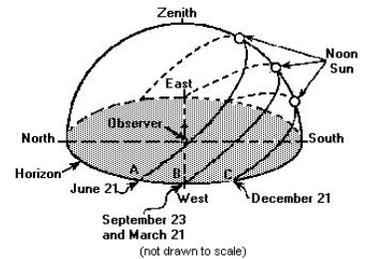
176. Our sun will eventually swell up to be a red giant then shrink down into a white dwarf.
177. Star get their energy from \_\_\_\_\_ (4 hydrogen into 1 helium)
178. The theory of the formation of the universe is called the \_\_\_\_\_ theory.
179. The inner Terrestrial (rocky) planets are composed of \_\_\_\_\_ and have \_\_\_\_\_ average density.
180. The outer Jovian (gaseous) planets are composed of \_\_\_\_\_ and have \_\_\_\_\_ average density.



181. All celestial objects appear to move from \_\_\_\_\_ to \_\_\_\_\_.
182. The moon has phases because it \_\_\_\_\_ around the \_\_\_\_\_.
183. Eclipses only occur at the \_\_\_\_\_ and full moon phases.
184. A lunar eclipse is when the \_\_\_\_\_ is blocked out.
185. A solar eclipse is when the \_\_\_\_\_ is blocked out.
186. Earth's seasons are caused by
1. \_\_\_\_\_
  2. \_\_\_\_\_ of the Earth's Axis
  3. \_\_\_\_\_ of the Earth's Axis



187. Evidence of Earth's revolution around the Sun is the changing \_\_\_\_\_ and \_\_\_\_\_ throughout the year,
188. Summer solstice is on \_\_\_\_\_.
- The \_\_\_\_\_ hemisphere is tilted toward the Sun.
  - The direct (perpendicular) rays of the sun hit the tropic of \_\_\_\_\_.
  - Sun rise is \_\_\_\_\_ of east, and sunset is \_\_\_\_\_ of the west.



189. Winter solstice is on \_\_\_\_\_.
- The \_\_\_\_\_ hemisphere is tilted towards the sun.
  - The direct (perpendicular) rays of the sun hit the Tropic of \_\_\_\_\_.
  - Sun rise is \_\_\_\_\_ of east, and sunset is \_\_\_\_\_ of west.
190. Equinoxes are \_\_\_\_\_ and \_\_\_\_\_.
- The direct (perpendicular) rays hit the \_\_\_\_\_.
  - The sun rise \_\_\_\_\_ and sets \_\_\_\_\_ on the equinoxes.

191. Greatest angle of insolation/perpendicular/vertical rays of the Sun (overhead sun) can only occur between \_\_\_\_\_°N & \_\_\_\_\_°S.

192. As the sun's angle of insolation increases, the sun's intensity \_\_\_\_\_.
193. Winds, ocean currents and anything else moving across Earth are deflected (curve) because of the \_\_\_\_\_.

194. Foucault's pendulum and Coriolis effect is evidence that the Earth \_\_\_\_\_.
195. Changing Seasons and Constellations is evidence that the Earth \_\_\_\_\_.
196. The Earth is closer to the sun during the \_\_\_\_\_ season.
197. Perihelion – earth is \_\_\_\_\_ to the sun.
198. Aphelion – earth is \_\_\_\_\_ to the sun.
199. Tides are caused by the \_\_\_\_\_ gravitational attraction.
200. There are \_\_\_\_\_ high tides, and \_\_\_\_\_ low tides per day (12 hours apart)- a cyclic pattern.
201. Our solar system is located  $\frac{3}{4}$  the way down one of the spiral arms of our galaxy- the \_\_\_\_\_.
202. The following is in \_\_\_\_\_ size and age order: Universe, Galaxy, Solar system, Earth.
203. \_\_\_\_\_ model is earth centered. Everything revolves around the earth.
204. \_\_\_\_\_ model is sun centered. Planets revolve around the sun.
205. All planets orbit in \_\_\_\_\_ (shaped) orbits with the \_\_\_\_\_ at one foci.
206. Earth received mainly short wave \_\_\_\_\_ during the day and later reradiates this energy back into space as \_\_\_\_\_ waves (heat energy).